

**SECTION 09 66 16**  
**TERRAZZO FLOOR TILE**

**1. GENERAL**

**1.01 SUMMARY**

- A. Section includes: Terrazzo floor tile covering and accessories.
- B. Related requirements:
  - 1. Drawings and General Provisions of the Contract (including General and Supplementary Conditions and Division 1 References Section)
  - 2. Section 03: Concrete (subfloors)
  - 3. Section 06: Wood (subfloors)
  - 4. Section 07: Thermal and moisture protection

**1.02 REFERENCE STANDARDS**

- A. ASTM International
  - 1. C 1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method
  - 2. D 2240 Standard Test Method for Durometer Hardness
  - 3. E 648 Standard Test Method for Critical Radiant Flux of Flooring Systems Using a Radiant Energy Source
  - 4. E 662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
  - 5. F 925 Standard Test Method for Resistance to Chemicals of Resilient Flooring
  - 6. F 970 Standard Test Method for Static Load Limit
  - 7. F 1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
  - 8. F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes
- B. European Norms (EN)
  - 1. EN 1815 Static electric Propensity
  - 2. Residual Indentation after Static Load
- C. Other referenced documents
  - 1. National Fire Protection Association (NFPA) 253: Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source
  - 2. LEED-NC, version 3

**1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Install floor covering after finishing operations, including painting and ceiling operations, have been completed.
- B. Pre-installation Meetings: Meet to confirm project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements in compliance with Division 1 requirements.

- C. Sequencing: Do not install floor covering over concrete substrates until substrates have cured and are dry to bond with adhesive as determined using test methods specified in ASTM F710 and following adhesive manufacturer's instructions.

#### **1.04 ACTION SUBMITTALS**

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures.
- B. Product Data: For specified products, submit latest edition of product supplier's technical specifications data (available from [www.floorazzo.com](http://www.floorazzo.com)).
- C. Samples: Submit selection and verification samples showing the required style and color for flooring as well as cove or sanitary base, stair treads and wall protection units

#### **1.05 INFORMATION SUBMITTALS**

- A. Test and Evaluation Reports
  - 1. Product test reports: As required by Conditions of the Contract and Division 1 Regulatory Requirements Section, submit test certificates from an independent test laboratory showing compliance with specified performance characteristics and physical properties.
  - 2. Compatibility and adhesion test reports: Submit test reports confirming adhesive's effectiveness with the product(s) specified.
- B. Manufacturer Instructions: For specified products, submit latest editions of product supplier's installation and cleaning & maintenance instructions (available from [www.floorazzo.com](http://www.floorazzo.com)).
- C. Sustainable Design Submittals: For projects requiring LEED submittal based on LEED-NC version 3
  - 1. Submit documentation substantiating that Floorazzo Marble contains a minimum of 18% pre-consumer recycled content and Floorazzo Gem contains a minimum of 18% pre-consumer and 18% post consumer recycled content. Therefore contributes to Materials & Resources Credit 4.
  - 2. For Floorazzo installations: submit documentation substantiating that Mapei Ultrabond ECO 373 adhesive is Green Label Plus certified and therefore contributes to Indoor Environmental Quality Credit 4.1.
  - 3. For Floorazzo installations: submit documentation substantiating that Sealer has a VOC level < 350 g/L and therefore contributes to Indoor Environmental Quality Credit 4.2.
  - 4. For Floorazzo installations: submit documentation substantiating that Floorazzo is manufactured using a mineral base and does not have an organic coating or sealer and therefore contributes to Indoor Environmental Quality Credit 4.3.

#### **1.06 CLOSEOUT SUBMITTALS**

- A. Warranty documentation: For specified products and accessories, submit product supplier's warranty documents (available from [www.floorazzo.com](http://www.floorazzo.com)).
- B. Sustainable Design Closeout Documentation: Submit documentation to substantiate implementation of each relevant category of LEED credits.

#### **1.07 QUALITY ASSURANCE**

- A. Installer: To be qualified to install the material, installer shall fulfill one of the following requirements.
  - 1. The Installing company shall utilize installers that are certified on the applicable Floorazzo installation process (Butt or Fusion Technique) by the supplier. Installers must be able to provide valid Certification documentation at the time of installation start.

2. Installer shall hire the manufacturer's representative to provide a minimum of 2 days of training and onsite supervision. Training shall be conducted prior to the start of the installation. Installing company shall provide installers ample time to participate in the training and certification process. This shall be included in the price of the installation from the Flooring Contractor.
- B. Testing Agency: Agency shall be independent and qualified to perform concrete substrate moisture and humidity testing according to ASTM F710 prior to the flooring being installed.
- C. Preconstruction Testing:
1. Concrete substrate: Reference Standard ASTM F710 for more detail. To partially summarize here, regardless of its age or grade level or history of use, perform the following concrete tests:
    - i. Concrete Moisture Test: Perform moisture tests (ASTM F1869 and ASTM F2170) on concrete with a minimum of three tests for the first 1000 square feet and one additional test for each 1000 square feet or fraction thereof. A diagram of the area showing the location and results of each test shall be dated and submitted to the architect, general contractor, and/or end user. If test results exceed the floor covering manufacturer's limits, installation shall not commence until results conform to limits.
    - ii. If test results on installations exceed the following limits, installation shall not commence until results conform to limits:

	<b>Mapei Ultrabond ECO 373 Adhesive</b>
<b>ASTM F 1869</b>	8 lbs/1000 ft <sup>2</sup> /24 hrs
<b>ASTM F 2170</b>	90% relative humidity

- iii. Concrete pH Test: Perform pH tests on concrete. Do not install when the pH is greater than or equal to 12. Readings below 7.0 and above 10.0 can adversely affect resilient flooring or adhesives, or both.
2. Wood substrate: Per ASTM F1482, wood subfloor/underlayment assemblies shall be double layer construction, with a total thickness of not less than 1"
- i. There shall be a minimum of 18 inches of well-ventilated air space beneath all wood subfloors. Crawl spaces shall be insulated and protected by a moisture vapor barrier.
  - ii. Do not install over "sleeper" underlayment systems or wood underlayment installed over concrete.
  - iii. Do not install over existing resilient flooring, Lauan panels, CCA plywood, fire-rated plywood, plywood with knots, underlayment made of pine or other soft woods, particle board, Masonite™, or other hardboard underlayment, hardwood flooring, treated or otherwise coated wood material, or other uneven or unstable substrates. Unacceptable substrates shall be covered using a ¼ inch or thicker panel underlayment that is warranted by the underlayment manufacturer for use as an underlayment for sheet vinyl floor covering in commercial applications.
  - iv. Fasten underlayment panels using underlayment staples or nails. Screws are not recommended.

## **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. General: Comply with Division 1 Product Requirements Section
- B. Delivery and Acceptance Requirements: Comply with the product supplier's ordering and lead time requirements to avoid construction delays, and to allow material to acclimatize as required in the specified product's installation instructions. Accept delivery of materials only if they are in unopened, undamaged packaging that bears the name and brand of the manufacturer/product supplier, project identification, and shipping and handling instructions.
- C. Storage and Handling Requirements: Upon receiving floor covering, immediately remove from pallet and lay on a flat surface. Store material -- including underlayment panels, patching or underlayment compound, floor covering material and adhesive -- in the original packaging (as delivered) in areas that are enclosed and weather tight with the permanent

HVAC system set at a temperature of between 65°F and 80°F for a minimum of 48 hours prior to commencement of installation. In addition, comply with storage and handling requirements listed on product packaging, and described in the latest edition of the product's installation instructions (available from [www.floorazzo.com](http://www.floorazzo.com)).

## 1.09 AMBIENT SITE CONDITIONS

The permanent HVAC system shall be operational and set at a temperature of between 65°F and 80°F for a minimum of 48 hours prior to commencement of installation, during the time of installation, and for 48 hours after installation has been completed. Thereafter, minimum temperature shall be 55°F. Refer to the latest version of the installation instructions (available from [www.floorazzo.com](http://www.floorazzo.com)) for additional ambient requirements (humidity, completion of related work or substrates, etc.) under which the work must be performed in order for the work results to provide the specified quality.

## 2. PRODUCTS

### 2.01 MANUFACTURERS

- A. Supplier: **Floorazzo Tile, LLC**, 215 W. Third Street, Siler City, NC 27344, Ph: 919-663-1684, [www.floorazzo.com](http://www.floorazzo.com)
- B. Product shall be Precast Terrazzo Tile product made with Polyester Resins for flexibility of installation. Products made from Epoxy Resins or Cementitious Materials shall not be allowed. Product must be designed for installation with resilient adhesive; thin-set and grouting is not allowed.
- C. Obtain all materials including tile, adhesive, Fusion, etc. from one single manufacturer
- D. Product Installation Type:
  - 1. Butt Install method: 2' x 2' Terrazzo Tile shall be installed in Butt Tile fashion, where tiles are laid next to each other without grout line.
  - 2. Fusion: Larger 24" x 24" Terrazzo Tile (or) Larger 24" x 48" Terrazzo Panels shall be installed using Fusion Technique where tiles are bonded to each other to provide a seamless floor.
- E. Substitutions: no substitutions permitted.  
*[Specifier note: edit this paragraph to suit project requirements. If substitutions are permitted, edit text. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.]*
- F. Product Options
  - 1. Floorazzo **Gem – Standard – 24" x 24"**
    - Size: 24" X 24"
    - Weight: 2.15 lb/ft<sup>2</sup>
    - Gauge: 3/16"
    - Edges: Straight
    - Install: Butt or Fusion
    - Colors:
  - 2. Floorazzo **Gem – Panel – 24" x 48"**
    - Size: 24" x 48"
    - Weight: 2.15 lb/ft<sup>2</sup>
    - Gauge: 3/16"
    - Edges: Straight
    - Install: Fusion
    - Colors:

3. Floorazzo **Marble – Standard – 24” x 24**

Size: 24” x 24”  
Weight: 2.15 lb/ft<sup>2</sup>  
Gauge: 3/16”  
Edges: Straight  
Install: Butt or Fusion  
Colors:

4. Floorazzo **Marble – Panels 24” x 48”**

Size: 24” x 48”  
Weight: 2.15 lb/ft<sup>2</sup>  
Gauge: 3/16”  
Edges: Straight  
Install: Fusion  
Colors:

5. Floorazzo **Tiles – Custom**

Size: 24” x 24” or 24” x 48”  
Weight: 2.15 lb/ft<sup>2</sup>  
Gauge: 3/16”  
Edges: Straight  
Install: Butt or Fusion  
Colors: Custom Selection

G. Performance: Physical properties of Floorazzo Tiles shall conform to the following minimums:

Safety

Critical radiant flux	ASTM E648	Class 1
Smoke density	ASTM E662	Pass
Slip resistance	ASTM C1028	Wet: 0.7; Dry: 0.66

Durability

Static load limit	ASTM F970	1,000 psi
Chemical resistance	ASTM F925	No change

LEED-NC v.2.2

MR Credit 4: Recycled content

Gem (Glass):	18% pre-consumer recycled content 18% post-consumer recycled content
Marble:	18% pre-consumer
IEQ Credit 4.1: Low-emitting adhesives VOC content	Mapei Ultrabond ECO 373 Adhesive has a low
IEQ Credit 4.2: Low-emitting sealers	Diversey Plaza Plus or equal
IEQ Credit 4.3: Low-emitting flooring	Floorazzo is manufactured with a mineral base

**2.02 ACCESSORY PRODUCTS**

- A. Cove Base: 4” or 6” Cove Base in Matching Color
- B. Divider Strips: Consult factory
- C. Sanitary Cove: Architect shall specify use of standard or sanitary cove as required by application.
- D. Stair Tread: Stair tread shall be same material and color as specified for tiles.
- E. Wall Protection: Wall Tiles shall be made of the same material and thickness as the floor tile material.
- F. Adhesive: Architect to specify adhesive and trowel notch size per the latest edition of the installation instructions (available from [www.floorazzo.com](http://www.floorazzo.com)).

- G. Sealer: Architect shall specify per the latest edition of the installation instructions (available from [www.floorazzo.com](http://www.floorazzo.com)).
- H. Cleaning Products: Architect can specify per the latest edition of the maintenance instructions (available from [www.floorazzo.com](http://www.floorazzo.com)).

### **3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Overall: Follow guidelines laid out in Division 01, Section 01 71 00 – Examination and Preparation as well as Section 01 43 00 – Quality Assurance.
- B. Verification of Conditions: Inspect all substrates and subfloors for proper tolerances and dryness and report any discrepancies to the general contractor in writing.
- C. Pre-installation Testing: Verify that concrete testing per ASTM F710 has been conducted by an independent testing agency, and that results are within the adhesive and floor covering manufacturers' requirements.
- D. Evaluation and Assessment: See the state requirements for the project location.
- E. Proper storage and acclimation of product according to manufacturer's procedures

#### **3.02 SURFACE PREPARATION**

- A. Follow guidelines laid out in Division 01, Section 01 71 00 – Examination and Preparation.
- B. Prepare concrete substrates per ASTM F 710. All work required to put the concrete subfloor in acceptable condition shall be the responsibility of the general contractor. See the state requirements for the project location.
- C. Close adherence to the manufacturer requirements for floor levelness and preparation.

#### **3.03 INSTALLATION**

- A. Follow Division 01 relevant guidelines, and the latest edition of the manufacturer's installation instructions (available from [www.floorazzo.com](http://www.floorazzo.com)). Only use written instructions from the manufacturer
- B. Interface with Other Work: If transitions are required to and/or from the specified floor covering, contact the supplier for suitable transition material.

#### **3.04 FIELD QUALITY CONTROL**

- A. Field Tests: this is for installed work (after job is done)
- B. Manufacturer Services: Coordinate with supplier if an on-site manufacturer's representative is required. Installers without prior experience must have manufacturer's representative on site for training and oversight as required by the manufacturer.

#### **3.05 CLEANING**

- A. General: Clean up job site, including sweeping or dust mopping the floor to remove all dirt or grit, and put all waste in general contractor's dumpster. Follow overall cleaning guidelines described in Division 01.
- B. Initial Maintenance: Installer is responsible and must conduct the initial penetrating floor sealer and surface treatment. It must be conducted immediately after installation.
- C. Initial maintenance shall be per the latest edition of the manufacturer's maintenance instructions (available from [www.floorazzo.com](http://www.floorazzo.com))

#### **3.06 CLOSEOUT ACTIVITIES**

Follow stated requirements and Division 01 Section 01 76 00 – Protecting Installed Construction and Section 01 78 00 – Closeout Submittals requirements for these activities.

**END OF SECTION**